

Serial No.: 09/871,171
Amendment dated 03 February 2004
Reply to Office Action mailed 03 December 2003

Docket No.: KCC-15,135

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A method for producing a structured composite material having a plurality of apertures for accommodating passage of fluids through the structured composite material, the method comprising the steps of:

forming a first layer having a first shrinkage extent, said first layer comprising a fibrous nonwoven web;

extruding a second layer onto the first layer, the second layer comprising a film and having a second shrinkage extent different from the first shrinkage extent;

forming the plurality of apertures through the second layer; and

differentially shrinking at least one of the first layer and the second layer to increase a bulk of the composite material and produce a structure of the structured composite material.

2. (Original) The method of claim 1, wherein the plurality of apertures are formed through the second layer using one of pin embossing, slitting, laser embossing and thermal embossing.

3. (Canceled)

4. (Original) The method of claim 1, further comprising the step of forming the plurality of apertures through the first layer.

5. (Original) The method of claim 1, further comprising the step of heating the composite material to affect shrinkage of at least one of the first layer and the second layer.

6. (Original) The method of claim 5, wherein the composite material is heated using one of infrared, hot air, microwave, a cure oven and a through-air-bonder.

7-10. (Canceled)

11. (Original) The method of claim 1, wherein the apertures formed each have a diameter of about 100 microns to about 10,000 microns.

12. (Original) The method of claim 1, wherein the apertures are formed by producing a plurality of slits through at least the second layer, and opening each slit to form a corresponding aperture.

13. (Original) The method of claim 12, wherein the slits are formed using expanded metal plates.

14. (Original) The method of claim 12, wherein the slits are formed in one of a machine direction, a cross machine direction and an angular direction.

15. (Original) The method of claim 12, further comprising the step of forming slits in the first layer.

16. (Original) The method of claim 1, wherein the first layer comprises a polypropylene polymer.

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17. (Original) The method of claim 1, wherein the second layer comprises an ethylene-polypropylene random copolymer.

18. (Canceled)

19. (Previously Presented) The method of claim 1, wherein a filler is added to the film.

20. (Original) The method of claim 19, wherein the filler is selected from the group consisting of clay, calcium carbonate, diatomaceous earth, titanium dioxide, and talc.

21. (Canceled)

22. (Canceled)

23. (Withdrawn) The method of claim 24, wherein the apertures each have a diameter of about 100 microns to about 10,000 microns.

24. (Withdrawn) A method for producing a structured heterogeneous nonwoven web material having a plurality of apertures for accommodating passage of fluids through the structured heterogeneous nonwoven web material, the method comprising the steps of:

providing a first homogeneous fiber set having a first shrinkage extent;

providing a second homogeneous fiber set having a second shrinkage extent different from the first shrinkage extent;

forming a heterogeneous nonwoven web material by combining the first homogeneous fiber set and the second homogeneous fiber set;

forming the plurality of apertures in the heterogeneous nonwoven web material; and

shrinking at least one of the first homogeneous fiber set and the second homogeneous fiber set to form the structured heterogeneous nonwoven web material,

wherein the apertures are formed by producing a plurality of slits through the heterogeneous nonwoven web material, and opening each slit to form a corresponding aperture.

25. (Withdrawn) The method of claim 24, wherein expanded metal plates produce the slits in the heterogeneous nonwoven web material.

26. (Withdrawn) The method of claim 24, wherein the slits are formed in one of a machine direction, a cross machine direction and an angular direction.

27. (Withdrawn) The method of claim 24, further comprising the step of shrinking the first homogeneous fiber set relative to the second homogeneous fiber set to produce the structured heterogeneous nonwoven web material.

28. (Withdrawn) The method of claim 24, further comprising the step of shrinking the second homogeneous fiber set relative to the first homogeneous fiber set to produce the structured heterogeneous nonwoven web material.

29. (Withdrawn) A method of producing a heterogeneous nonwoven web material having a structure for accommodating passage of fluids through the heterogeneous nonwoven web material, the method comprising the steps of:

forming the heterogeneous nonwoven web material by combining a first homogeneous fiber set with a first shrinkage extent and a second homogeneous fiber set with a second shrinkage extent different from the first shrinkage extent;

applying a plurality of slits through the heterogeneous nonwoven web material; and

heating the heterogeneous nonwoven web material to shrink at least one of the first homogeneous fiber set and the second homogeneous fiber set to produce the structure, whereby each slit opens to form an aperture.

30. (Withdrawn) The method of claim 29, further comprising the step of applying a topsheet to the heterogeneous nonwoven web material before heating the heterogeneous nonwoven web material, wherein the topsheet has a shrinkage extent different from the first shrinkage extent and the second shrinkage extent.

31. (Withdrawn) The method of claim 29, wherein the topsheet comprises one of a film and a meltspun fabric.

Claims 32-41. (Canceled)

42. (New) The method of claim 1, wherein an initial bulk of the composite material is increased by at least 50% during the shrinkage step.

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43. (New) The method of claim 1, wherein an initial bulk of the composite material is increased by at least 100% during the shrinkage step.

44. (New) The method of claim 1, wherein an initial bulk of the composite material is increased by at least 400% during the shrinkage step.

45. (New) The method of claim 1, wherein an initial bulk of the composite material is increased by about 100% to about 800% during the shrinkage step.